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July 25, 2008

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Re: Eratta Sheet for the Expert Report of Dr. Roger Olsen

Dear Leslie,

Please find attached the Errata Sheet for the Expert Report of Dr. Roger Olsen for distribution to defense counsel. If you have any questions, please give me a phone call.

Very Truly Yours,



David P. Page

DPP/sdk

Enc.

In the matter of

State of Oklahoma, ex rel., A. Drew Edmondson in his capacity as Attorney General of the State of Oklahoma, and Oklahoma Secretary of the Environment, C. Miles Tolbert, in his capacity as the Trustee for Natural Resources for the State of Oklahoma, Plaintiffs

v.

Tyson Foods, Tyson Poultry, Tyson Chicken, Inc., Cobb-Vantress, Inc., Aviagen, Inc., Cal-Maine Foods, Cal-Maine Farms, Inc., Cargill, Inc., Cargill Turkey Products, LLC, Georges, Inc., George's Farms, Inc., Peterson Farms, Inc., Simmons Foods, Inc., and Willowbrook Foods, Inc.
Defendants.

CASE NO. 05-CV-329-GFK-SAJ


in the United States District Court
for the Northern District of Oklahoma

Errata for Export Report

of

Roger L. Olsen, Ph.D.
CDM
555 17th Street, Suite 1100
Denver, CO 80202

Prepared by:

A handwritten signature in cursive script that reads "Roger L. Olsen". The signature is written in dark ink on a light-colored background.

Roger L. Olsen

July 25, 2008

Errata for Expert Report of Roger L. Olsen dated May 14, 2008

Cover

“United Station District” should be “United States District”

Contents

Page i: under section 2.3, “2.2.8” should be “2.3.8”

Page vii: “6.13” should be “6.12”

Page vii: Add “**Section 7 References**”

Page ix: eliminate table “2.5-2 Summary of Sampled Residential Wells and Direct Push Sampling Locations”

Page x: add table “6.4-6 Discharge Volumes”

Page x: Change “6.11-1b” to “6.11-2”

Page x: Change “6.11-2” to “6.11-3”

Page x: Change “6.11-3” to “6.11-4a Parameters not Retained (Water)”

Page x: add “6.11-4b Parameters not Retained (Solids)”

Page x: Change “6.11-4 Percent Directions-Water” to “6.11-5 Percent Detection and Retained Parameters (Water)”

Page x: Change “6.11-5 Percent Directions-Soil” to “6.11-6 Percent Detections and Retained Parameters (Solids)”

Page x: eliminate table 6.11-6

Page xiii: eliminate Figure 6.6-25

Section 1

Page 1-1, line 7: “Source” should be “Sources”

Page 1-1, line 11: eliminate “the” in “the each major”

Page 1-2, last sentence: change “opinions is” to “opinions are”

Section 2

Page 2-1, paragraph 1, line 4, “phosphorous” should be “phosphorus”

Page 2-1, paragraph 1, line 6, “material. In order” should be “material and”

Page 2-1, paragraph 5, line 7, “producers” should be “producer”

Page 2-1, paragraph 6, line 2, “to soil” should be “to the soil”

Page 2-3, paragraph 2, line 12, add “(decontamination)” after “protocols”

Page 2-5, paragraph 2, lines 8 and 9: “Appendix A-3 of” should be “documents referenced in”

Page 2-5, paragraph 2, line 18: “Appendices A-3 and A-4 of” should be “Section 4-2 and documents referenced in”

Page 2-5, paragraph 2, lines 22: “SOP 5-1” should be “verbal instructions”

Page 2-5, paragraph 2, lines 23 and 24: “Appendices A-3 and A-4 of” should be “documents referenced in”

Page 2-6, paragraph 1, line 5: “Appendices A-3 and A-4 of” should be “documents referenced in”

Page 2-7, Line 23 of Section 2.2.8: “2.2-28” should be “2.2-22”

Page 2-8, paragraph 4, line 10: remove “a” from “out a field”

Page 2-9, paragraph 2, line 8: “to fields, ditches” should be “to fields in ditches”
 Page 2-9, paragraph 5, line 3: eliminate “a” from “on a several”
 Page 2-9, paragraph 5, line 9: “lab oratory” should be “laboratory”
 Page 2-12, paragraph 1, line 3: “chicken” should be “poultry”
 Page 2-12, paragraph 1, line 5: “10” should be “ID”
 Page 2-12, paragraph 1, line 6: “poultry waste disposal was” should be “evidence of poultry waste disposal and a poultry house were”
 Page 2-12, paragraph 3, line 4: add “up to” before “24”
 Page 2-14, paragraph 2, line 2: “chicken” should be “poultry”
 Page 2-15, paragraph 4, line 3: “on groundwater” should be “on the groundwater”
 Page 2-16, paragraph 6, line 4: “locations” should be “LAL locations”
 Page 2-17, paragraph 4, line 2: “minutes to for” should be “minutes for”
 Page 2-17, paragraph 4, line 5: “groundwater sampling locations” should be “locations with groundwater samples”
 Page 2-17, paragraph 4, line 7: remove “the represents”
 Page 2-17, paragraph 4, lines 7, 8, 10: “chicken” should be “poultry”
 Page 2-17, paragraph 6, line 3: add “Oklahoma” before “State Water”
 Page 2-18, Line 1 of Section 2.5.9: “Table 2.5-2” should be “Table 2.5-1”
 Page 2-20, paragraph 2, line 4: “samples” should be “sampled”
 Page 2-21, paragraph 6: after first sentence add: “In small lakes, sediments were sieved only if the sample contained sand sized materials.”
 Page 2-23, paragraph 3, line 1: “component” should be “components”
 Page 2-24, paragraph 2, lines 7 and 8: “chicken” should be “poultry”
 Page 2-25, paragraph 1 of section 2.8.2, line 9: “THM formation” should be “TTHM formation potential”
 Page 2-26, paragraph 2, line 1: “river and streams” should be “river and stream locations”
 Page 2-27, paragraph 4, line 2: eliminate “selected to be”
 Page 2-30, paragraph 2, line 1: “is” should be “are”
 Page 2-31, paragraph 1, line 4: “fish,” should be removed
 Page 2-31, paragraph 3, line 3: “and site conditions” should be “and/or 2007 site conditions”
 Page 2-27, paragraph 2, line 6: “chicken” should be “poultry”
 Page 2-28, paragraph 7, line 2: “where” should be “were”
 Page 2-33, paragraph 1, line 1: “Staffing fish” should be “Fish”
 Page 2-38, paragraph 4 (bullet 4): “chicken” should be “poultry”
 Page 2-38, section 2.9.7: “discusses” should be “discussed”
 Page 2-41, paragraph 6, line 2: add “on and around” before “Lake Tenkiller”
 Page 2-41, paragraph 7, line 5: “choloraphyll” should be “chlorophyll”
 Page 2-41, paragraph 7, line 6: “formation potential (TTHM)” should be “(TTHM) formation potential”
 Page 2-42, paragraph 3, line 10: Add “LK-05 was located near the dam and sampled in 2007 for limited parameters.”
 Page 2-42, paragraph 4, line 2: “epliminion” should be “epilimnion”
 Page 2-44, paragraph 2, line 10: “lakes” should be “lake”

Page 2-44, paragraph 4, line 3: “inlest” should be “inlet”; “samples” should be “sampled”

Page 2-45, third bullet list: eliminate “Secchi depth”

Page 2-46, paragraph 5, line 4: “phosphorous” should be “phosphorus”

Page 2-46, paragraph 5, line 5: “Fischer” should be “Fisher” (two times)

Page 2-46, paragraph 7, line 1: “diver” should be “divers”

Page 2-49, paragraph 1, line 1: eliminate “all” from “all field”

Page 2-52, paragraph after first bullet list, line 4: “REF-01.RS-10003” should be “REF-01/RS-10003”

Page 2-54, paragraph 4, line 5: “are” should be “were”

Page 2-54, paragraph 5, line 1: “will be” should be “are”

Page 2-54, paragraph 5, lines 2 and 3: eliminate “to be” in line 2; “include” should be “included” in line 3

Page 2-55, paragraph 1, line 1: “include” should be “included”

Page 2-55, paragraph 1, line 12: “source” should be “sources”

Page 2-58, paragraph 2, line 11: “owner the” should be “owner of the”

Page 2-59, paragraph 3, line 1: “where” should be “were”

Page 2-61, paragraph 3, line 3: “vials.” should be “vials for PCR.”

Page 2-61, paragraph 3, line 4: “manure.” should be “manure for full suite analyses.”

Page 2-62, Section 2.15, paragraph 1, lines 7, 9, 14: “Fischer” should be “Fisher”; “had” should be “has” in line 7

Page 2-64, first bullet: “every” should be “ever”

Missing Figure 2.4-1b – note: this figure contained no additional information (it is a visual presentation of information in Figure 2.4-1a and Table 2.4-1): missing figure 2.4-1b is attached

Figure 2.4-2: missing figure number and label of the figure: add “Figure 2.4-2, Depiction of Automated Samplers”; figure 2.4-2 with figure number and label is attached

Section 3

Page 3-1, paragraph after first bullet list, line 1: “CDMs scope” should be “CDM scopes”

Page 3-3, second bullet, line 8: “not” should be “no”

Page 3-5, paragraph 3, line 10: “method SW846” should be “SW846”

Page 3-9, paragraph 4, line 2: eliminate “be”

Page 3-10, paragraph after bullet list, line 2: “duplicate samples” should be “duplicate samples,”

Page 3-14, paragraph 2, line 5: “lass” should be “less”

Page 3-16, paragraph 4, line 1: “Table 3.8-1” should be “Appendix B”

Page 3-19, Line 3 of Section 3.11.1: “Table 3.11.1” should be “Table 3.11.1-1”

Page 3-19, Line 4 of Section 3.11.1: “Table 3.11.2” should be “Table 3.11.1-2”

Table 3.4-1: for Aquatec change “plankton” to “zooplankton”; remove ETC from the table; for GLEC remove “plankton” and add “sediment toxicity”; for MSU add “, diatoms and periphyton”; for Janik remove “/zooplankton”

Section 4

Page 4-2, paragraph 2: eliminate last sentence beginning with “The database is ...”

Section 5

Page 5-2, paragraph 1, line 7: “weigh” should be “weight”

Section 6

Page 6-2, last paragraph, line 8: “form” should be “from”

Page 6-5, paragraph 1, end of paragraph: add “For discussions below, the following general factor ranges were discussed: 2-5, 5-10, 10-100 and greater than 100. These general ranges were based on the following numeric values: 1.8-5.2, 5.21-10.2, 10.21-100.2 and greater than 100.21, respectively.”

Page 6-5, paragraph 3

Line 2: “fresh” should be “dry”

Line 4: remove “vanadium”

Line 6: add “nickel”

Page 6-5, paragraph 4

Line 2: “dry” should be “fresh”

Line 7: add “vanadium”

Line 9: “concentrations” should be “concentrations (>5.21 times)”

Line 10: add “staphylococcus”

Page 6-6, paragraph 3

Line 3: add “dissolved aluminum”

Line 6: add “chloride” and remove “dissolved aluminum”

Line 7: remove “chloride”

Page 6-6, paragraph 4

Line 2: add “dissolved aluminum” and “dissolved manganese”

Line 5: remove “dissolved manganese”

Line 9: remove “dissolved aluminum”

Line 12: “The dried cattle manure” should be “Except for staphylococcus, the dried cattle manure”

Line 13: “concentrations” should be “concentrations (>5.21 times)”

Page 6-7, paragraph 2:

Line 13: “levels” should be “levels (2-5 times greater)”

Line 20: add “nitrate+nitrite” and “chloride”; “higher” should be “higher (>1.8 times)”

Page 6-8, paragraph 1:

Line 22: “higher” should be “higher (>1.8 times)”

Page 6-8, paragraph 2

Line 5: “leachate” should be “EOF”

Line 7: add “dissolved zinc”

Line 11: remove “dissolved zinc”

Line 14: add “total arsenic” and “dissolved nickel”

Line 18: “nitrate” should be “nitrite”

Page 6-9, second bullet, line 2: “concentrations” should be “concentrations than cattle manure synthetic leachates and WWTP effluents”; “results” should be “result” in line 5
Page 6-9, third bullet, line 2: “is” should be “if”; “contributor” should be “contributors”

Page 6-10, paragraph 1, line 1: “this” should be “this is”

Page 6-10, paragraph 5, line 9: “20L” should be “2L”

Page 6-10, paragraph 5, line 14: “477,000” should be “500,000”

Page 6-11, paragraph 1, end of paragraph: add “For discussions below, the following general factor ranges were discussed: 2-5, 5-10, 10-100 and greater than 100. These general ranges were based on the following numeric values: 1.8-5.2, 5.21-10.2, 10.21-100.2 and greater than 100.21, respectively.”

Page 6-11, paragraph 2: replace with the following paragraph:

“As shown in **Table 6.4-7b**, for the fresh manure mass, a factor between two and five was calculated (i.e., the leachable poultry mass is 2 to 5 times greater than the leachable cattle mass) for 17a-estradiol, alkalinity (low limit), dissolved aluminum, dissolved cobalt (low limit), dissolved magnesium, dissolved manganese, dissolved selenium, soluble reactive P (4500PF) (low limit), total dissolved P (4500PF) (low limit), and total dissolved P (6020) (low limit). A factor of between five and ten was observed (i.e., the leachable poultry mass is 5 to 10 times greater than the leachable cattle mass) in fresh manure for alkalinity (high limit), dissolved chromium, dissolved cobalt (high limit), dissolved sodium, soluble reactive P (4500PF) (high limit), total dissolved P (4500PF) (high limit), total dissolved P (6020) (high limit) and total dissolved solids. A factor of greater than 10 was calculated for the fresh manure leachates for chloride, dissolved arsenic, dissolved iron, dissolved molybdenum, dissolved nickel, dissolved potassium, dissolved zinc, TKN and total sulfate. The greatest difference (over 100 times greater) between the poultry waste mass and the fresh cattle manure mass was observed for dissolved copper. The fresh cattle manure mass had higher values than the poultry waste (>1.8 times) of only TOC and estrone.”

Page 6-11, paragraph 3: replace with the following paragraph:

“As shown in **Table 6.4-7b**, for the dry manure mass, a factor between two and five was calculated for dissolved aluminum, dissolved cobalt (lower limit), dissolved magnesium, dissolved manganese (lower limit), dissolved selenium, e. coli (upper limit), enterococcus (upper limit), fecal coliform (upper limit), soluble reactive P (4500PF) (lower limit) and total coliform (upper limit). A factor between five and ten was observed in the dry manure mass for alkalinity (lower limit), dissolved chromium, dissolved cobalt (upper limit), dissolved manganese (upper limit), soluble reactive P (4500PF) (upper limit), total dissolved P (4500PF) and total dissolved P (6200). A factor of greater than 10 was calculated for the dry manure leachates for alkalinity (upper limit), chloride, dissolved arsenic, dissolved iron, dissolved molybdenum, dissolved nickel, dissolved potassium, dissolved sodium, dissolved zinc, total dissolved solids, TKN, and total sulfate. The greatest difference (over 100 times greater) between the poultry waste mass and the dry cattle manure mass was observed for dissolved copper and 17a-estradiol. The dry cattle manure leachate had no constituents with higher mass values (>1.8 times) than poultry waste.”

Page 6-12, first table: replace with the following table:

Parameter	Units	Cattle Contribution (Poultry Low Limit)	Cattle Contribution (Poultry High Limit)
Dissolved Copper	%	0.4	0.3
Dissolved Potassium	%	2.7	1.9
Dissolved Zinc	%	4.2	3.0
Enterococcus Group	%	44.1	35.9
Soluble Reactive P (4500PF)	%	18.3	13.7
Total Dissolved P (4500PF)	%	16.4	12.2
Total Dissolved P (6020)	%	14.5	10.7
Total Kjeldahl Nitrogen	%	7.7	5.6
Total Sulfate (SO ₄)	%	2.8	2.0
Dissolved Arsenic	%	2.3	1.6
Dissolved Iron	%	6.9	5.0
Dissolved Manganese	%	20.1	15.1
Dissolved Nickel	%	2.4	1.7
Dissolved Sodium	%	4.4	3.1
Fecal Coliform	%	41.8	33.7
Total Dissolved Solids	%	8.3	6.0

Page 6-13, first bullet: “7.4 and 13” should be “10.7 and 18.3”; “0.2 to 2.8” should be “0.3 to 4.2”; “1.3 to 2.9” should be “1.9 to 4.4”; “32 to 39” should be “34 to 42”

Page 6-13, paragraph after bullet list, line 3: “substantial” should be “substantially”; “and make” should be “to facilitate” in line 5

Page 6-14, paragraph 4, line 2: “agrinomic” should be “agronomic”

Page 6-15, paragraph 2, line 1: “apposed” should be “opposed”

Page 6-18, first paragraph after bullet list, line 9: “calculate” should be “evaluate”

Page 6-18, second paragraph after bullet list, line 10: “present” should be “typically present”

Page 6-18, second paragraph after bullet list, end of paragraph: add “The values shown in Tables 6.5-1, 6.5-2 and 6.5-3 were taken from Appendices C and D.”

Page 6-19, paragraph 6, line 4: “”found” should be “typically found”

Page 6-20, paragraph 4, lines 1 and 2: remove “the majority of the concentrations of enterococci for the EOF range from 2200 MPN/100mL to 33000 MPN/100mL.”

Page 6-22, line 11 of Section 6.7.1.2: “501 mg/kg to 750 mg/kg” should be “650 mg/kg to 1300 mg/kg” and remove “similar”

Page 6-22, Section 6.7.1.3

Line 5: “440 mg/kg to 534 mg/kg” should be “550 mg/kg to 1000 mg/kg”

Line 5: “An increase” should be “A decrease”

Line 6: remove “both”

Line 7: add after “and” the following: “an increase was observed for”

Line 16: “8.6 mg/kg to 25.2 mg/kg” should be “17 mg/kg to 40 mg/kg”

Page 6-23, paragraph 6, last line: “form” should be “from”

Page 6-24, paragraph 1, line 3: eliminate “are”

Page 6-24, paragraph 4, line 1: “concentrations of” should be “concentrations of P”

Page 6-25, first bullet, line 2: “in complexed” should be “is complexed”

Page 6-26, paragraph 1, line 15: “concentrations” should be “concentration”

Page 6-32, paragraph 3, line 1: “know” should be “known”

Page 6-33, second bullet, line 1: “component sin” should be “components in”

Page 6-34, second bullet, line 4: “temporary” should be “temporal”

Page 6-41, paragraph after first bullet list, line 11: “paramets” should be “parameters”

Page 6-43, last bullet: This paragraph should not be a bullet but should be a sub-paragraph under the previous bullet.

Page 6-44, first bullet, last two lines: “expect for sodium, beryllium” should be “except for sodium, water soluble ammonium, beryllium”

Page 6-46, Step 9, line 1 after equation: after z_{ij} insert “is the standardized datum and x_{ij} ”

Page 6-52, paragraph 2, line 15: add “manganese”

Page 6-54, Step 12, paragraph 1, line 3: “temporary” should be “temporal”

Page 6-55, last paragraph, last line: “vertical” should be “horizontal”

Page 6-56, paragraph 3, line 4: eliminate “TOC” and add “manganese (dry only)”

Page 6-56, paragraph 3, line 8: “Nineteen (19)” should be “Seventeen (17)”

Page 6-56, paragraph 3, line 13: “PAC” should be “PCA”

Page 6-56, paragraph 4, line 5: “concentrations” should be “concentrations except barium”

Page 6-57, paragraph 1, line 2: “potssium” should be “potassium”

Page 6-57, paragraph 1, line 7: eliminate “or poultry waste leachate”

Page 6-57, paragraph 2, lines 3 and 5: “19” should be “17” and “14” should be “15”

Page 6-57, paragraph 5, lines 1 and 2: eliminate “sorted from high to low values”

Page 6-58, second bullet, line 3: “tributartiy” should be “tributaries; “tributarty” should be “tributaries”

Page 6-58, paragraph 1 after bullets, line 1: eliminate “sorted from the highest to lowest scores”

Page 6-59, Step 13, paragraph 2, line 2: “Figure 6.11-f” should be “6.11-18a”

Page 6-60, paragraph 2, line 6: “PC2” should be “PC1”

Page 6-61, paragraph 3, line 6: “where” should be “were”

Page 6-61, last paragraph, line 3: “10” should be “10 to 15”

Page 6-62, paragraph 1, line 12: “SPR” should be “SPR-26”; “plots” should be “plot”

Page 6-62, paragraph 3, lines 2, 3, 4 and 8: “Figure 6.11-20” should be “Figure 6.11-21”

Page 6-66, last paragraph: “6.11.3 Conclusions” should be “6.12 Conclusions”

Page 6-67, paragraph 1, line 6: “in” should be “is”

Tables 6.4-2a, 6.4-2b, 6.4-5: units for enterococcus group should be “MPN*/100ml or cfu/100mL”

Replace Tables 6.4-7a and 6.4-7b: see attached tables

Table 6.5-1: the “*” footnote should be footnote “3”

Table 6.5-2: the EOF column should be the same as the EOF column in Table 6.5-1

Table 6.11-1b should be numbered “Table 6.11-2”

Table 6.11-2 should be numbered “Table 6.11-3”

Figures for Section 6

Figures 6.9-1, 6.9-2 and 6.9-3: missing in original submittal and already submitted (6/2/08)

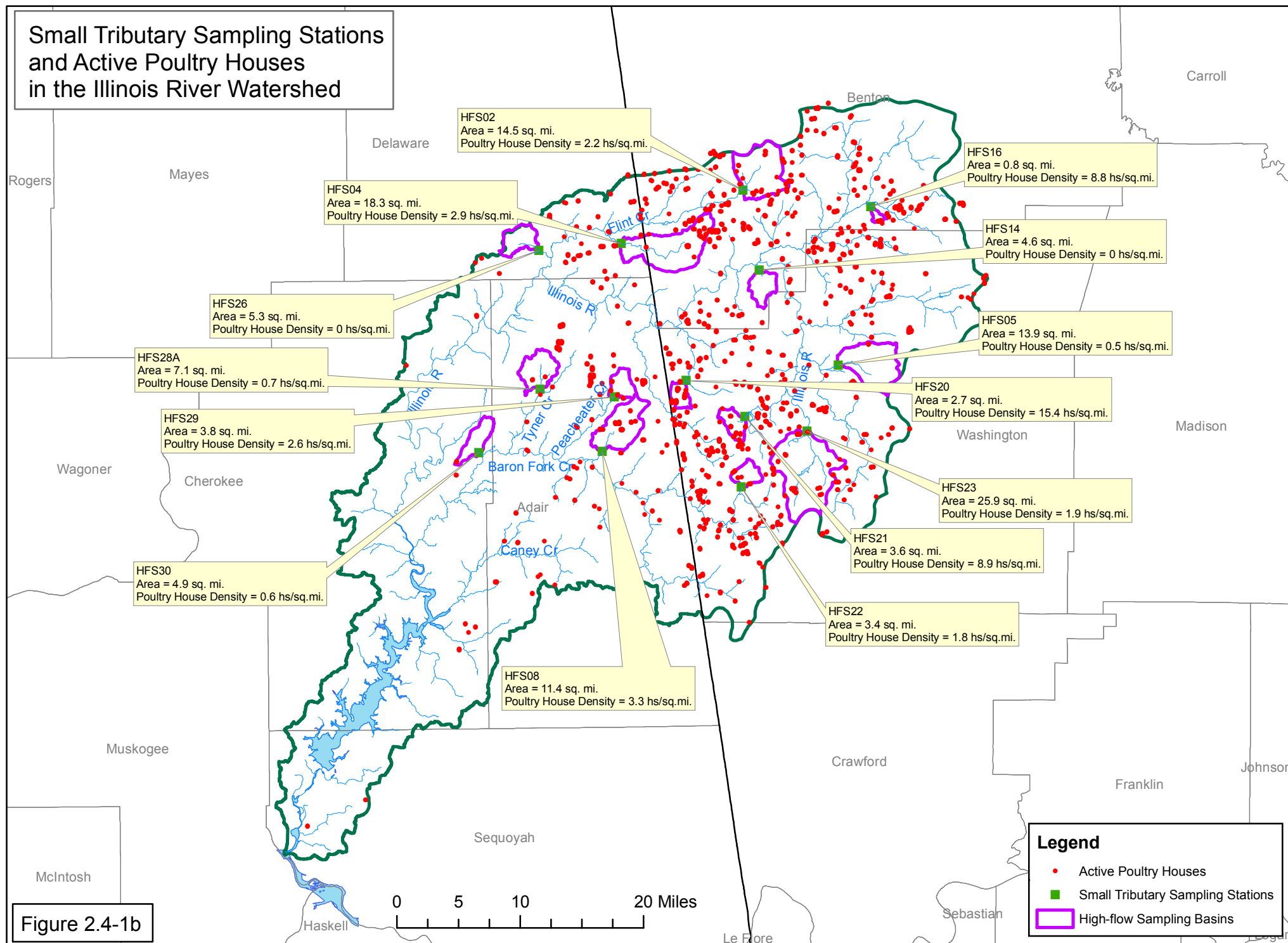


Figure 2.4-1b

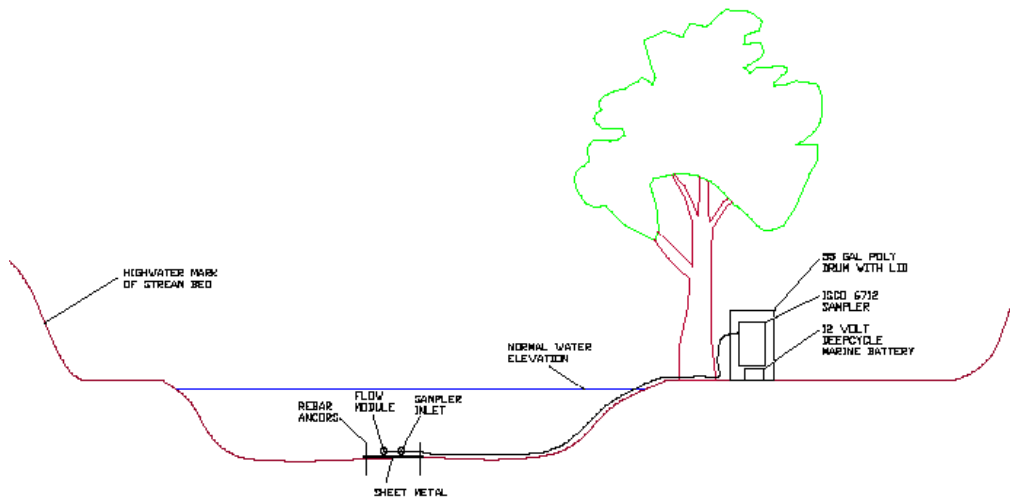


Figure 2.4-2
Depiction of Automated Samplers

Table 6.4-7a: Potential Masses in Leachates

Parameter	Units	Poultry-Greatest Leachable Concentration			Fresh Manure-Greatest Leachable Concentration		Dry Manure-Greatest Leachable Concentration	
		20:1 Ratio			20:1 Ratio		20:1 Ratio	
		Number of Samples	Low limit	High limit	Number of Samples	Average	Number of Samples	Average
17a-estradiol	mg	2	1.43E+06	2.02E+06	3	6.54E+05	1	2.89E+03
17b-estradiol	mg	2	2.62E+03	3.70E+03	3	2.89E+03	1	2.89E+03
Alkalinity (as CaCO3)	g	2	8.44E+09	1.19E+10	5	1.75E+09	5	8.80E+08
Chloride	g	2	2.11E+09	2.98E+09	5	1.57E+08	5	5.79E+07
Dissolved Aluminum	g	2	6.45E+06	9.11E+06	5	2.89E+06	5	2.89E+06
Dissolved Antimony	g	2	2.62E+04	3.70E+04	5	2.89E+04	5	2.89E+04
Dissolved Arsenic	g	2	1.25E+06	1.76E+06	5	2.89E+04	5	2.89E+04
Dissolved Barium	g	2	1.06E+06	1.50E+06	5	1.15E+06	5	8.39E+05
Dissolved Beryllium	g	2	2.62E+04	3.70E+04	5	2.89E+04	5	2.89E+04
Dissolved Cadmium	g	2	2.62E+04	3.70E+04	5	2.89E+04	5	2.89E+04
Dissolved Calcium	g	2	2.38E+08	3.36E+08	5	2.67E+08	5	1.99E+08
Dissolved Chromium	g	2	1.94E+05	2.74E+05	5	2.89E+04	5	2.89E+04
Dissolved Cobalt	g	2	1.39E+05	1.96E+05	5	2.89E+04	5	2.89E+04
Dissolved Copper	g	2	2.38E+07	3.36E+07	5	1.40E+05	5	9.95E+04
Dissolved Iron	g	2	3.92E+07	5.53E+07	5	2.89E+06	5	2.89E+06
Dissolved Lead	g	2	2.62E+04	3.70E+04	5	2.89E+04	5	2.89E+04
Dissolved Magnesium	g	2	3.13E+08	4.42E+08	5	1.63E+08	5	1.16E+08
Dissolved Manganese	g	2	8.07E+06	1.14E+07	5	4.47E+06	5	1.76E+06
Dissolved Molybdenum	g	2	6.03E+05	8.52E+05	5	2.89E+04	5	2.89E+04
Dissolved Nickel	g	2	1.23E+06	1.74E+06	5	4.40E+04	5	2.89E+04
Dissolved Potassium	g	2	5.12E+09	7.23E+09	5	4.23E+08	5	1.10E+08
Dissolved Selenium	g	2	8.65E+04	1.22E+05	5	2.89E+04	5	2.89E+04
Dissolved Silver	g	2	2.62E+04	3.70E+04	5	2.89E+04	5	2.89E+04
Dissolved Sodium	g	2	1.55E+09	2.18E+09	5	2.43E+08	5	5.13E+07
Dissolved Thallium	g	2	2.62E+04	3.70E+04	5	2.89E+04	5	2.89E+04
Dissolved Vanadium	g	2	1.78E+06	2.52E+06	5	1.78E+06	5	1.99E+06
Dissolved Zinc	g	2	1.35E+07	1.90E+07	5	6.89E+05	5	5.75E+05
E. coli	MPN or cfu	2	6.29E+14	8.89E+14	5	6.94E+14	5	4.25E+14
Enterococcus Group	MPN or cfu	2	4.19E+14	5.92E+14	5	4.81E+14	5	3.15E+14
Estril	mg	2	2.62E+03	3.70E+03	3	2.89E+03	1	2.89E+03
Estrone	mg	2	2.62E+03	3.70E+03	3	3.74E+05	1	2.89E+03
Fecal Coliform	MPN or cfu	2	6.29E+14	8.89E+14	5	6.94E+14	5	4.25E+14
Nitrite + Nitrate (as N)	g	2	5.24E+06	7.41E+06	5	5.79E+06	5	5.79E+06
Salmonella species	MPN or cfu	2	5.24E+10	7.41E+10	5	5.79E+10	5	5.79E+10
Soluble Reactive P (4500PF)	g	2	6.87E+08	9.70E+08	4	1.76E+08	4	1.52E+08
Staphylococcus aureus	MPN or cfu	2	7.86E+10	1.11E+11	4	1.02E+11	6	5.96E+11
TOC	g	2	5.35E+07	7.55E+07	5	2.93E+08	5	7.99E+07
Total Coliform	MPN or cfu	2	6.29E+14	8.89E+14	5	6.94E+14	5	4.51E+14
Total Dissolved P (4500PF)	g	2	8.65E+08	1.22E+09	4	2.19E+08	4	1.64E+08
Total Dissolved P (6020)	g	2	7.03E+08	9.92E+08	5	1.59E+08	5	1.15E+08
Total Dissolved Solids	g	2	2.93E+10	4.13E+10	5	5.31E+09	5	2.36E+09
Total Kjeldahl Nitrogen	g	2	3.16E+09	4.47E+09	5	2.62E+08	5	2.63E+08
Total Sulfate (SO4)	g	2	2.01E+09	2.84E+09	5	5.79E+07	5	5.79E+07

Figure 6.4-7b: Comparison of Potential Masses in Leachates

Parameter	Units	Poultry-Greatest Leachable Concentration			Fresh Manure-Greatest Leachable Concentration			Dry Manure-Greatest Leachable Concentration		
		20:1 Ratio			20:1 Ratio			20:1 Ratio		
		Number of Samples	Low Limit	High Limit	Number of Samples	Low Limit Factor	High Limit Factor	Number of Samples	Low Limit Factor	High Limit Factor
17a-estradiol	mg	2	1.43E+06	2.02E+06	3	2.19	3.09	1	495	699
17b-estradiol	mg	2	2.62E+03	3.70E+03	3	0.906	1.28	1	0.906	1.28
Alkalinity (as CaCO ₃)	g	2	8.44E+09	1.19E+10	5	4.83	6.82	5	9.6	13.6
Chloride	g	2	2.11E+09	2.98E+09	5	13.4	19	5	36.4	51.4
Dissolved Aluminum	g	2	6.45E+06	9.11E+06	5	2.23	3.15	5	2.23	3.15
Dissolved Antimony	g	2	2.62E+04	3.70E+04	5	0.906	1.28	5	0.906	1.28
Dissolved Arsenic	g	2	1.25E+06	1.76E+06	5	43.1	60.9	5	43.1	60.9
Dissolved Barium	g	2	1.06E+06	1.50E+06	5	0.924	1.31	5	1.26	1.78
Dissolved Beryllium	g	2	2.62E+04	3.70E+04	5	0.906	1.28	5	0.906	1.28
Dissolved Cadmium	g	2	2.62E+04	3.70E+04	5	0.906	1.28	5	0.906	1.28
Dissolved Calcium	g	2	2.38E+08	3.36E+08	5	0.892	1.26	5	1.2	1.69
Dissolved Chromium	g	2	1.94E+05	2.74E+05	5	6.7	9.47	5	6.7	9.47
Dissolved Cobalt	g	2	1.39E+05	1.96E+05	5	4.8	6.78	5	4.8	6.78
Dissolved Copper	g	2	2.38E+07	3.36E+07	5	170	240	5	239	338
Dissolved Iron	g	2	3.92E+07	5.53E+07	5	13.5	19.1	5	13.5	19.1
Dissolved Lead	g	2	2.62E+04	3.70E+04	5	0.906	1.28	5	0.906	1.28
Dissolved Magnesium	g	2	3.13E+08	4.42E+08	5	1.92	2.72	5	2.7	3.82
Dissolved Manganese	g	2	8.07E+06	1.14E+07	5	1.81	2.55	5	4.59	6.48
Dissolved Molybdenum	g	2	6.03E+05	8.52E+05	5	20.8	29.4	5	20.8	29.4
Dissolved Nickel	g	2	1.23E+06	1.74E+06	5	28	39.6	5	42.6	60.1
Dissolved Potassium	g	2	5.12E+09	7.23E+09	5	12.1	17.1	5	46.5	65.7
Dissolved Selenium	g	2	8.65E+04	1.22E+05	5	2.99	4.22	5	2.99	4.22
Dissolved Silver	g	2	2.62E+04	3.70E+04	5	0.906	1.28	5	0.906	1.28
Dissolved Sodium	g	2	1.55E+09	2.18E+09	5	6.36	8.99	5	30.2	42.6
Dissolved Thallium	g	2	2.62E+04	3.70E+04	5	0.906	1.28	5	0.906	1.28
Dissolved Vanadium	g	2	1.78E+06	2.52E+06	5	1	1.41	5	0.896	1.26
Dissolved Zinc	g	2	1.35E+07	1.90E+07	5	19.6	27.6	5	23.4	33.1
E. coli	MPN or cfu	2	6.29E+14	8.89E+14	5	0.906	1.28	5	1.48	2.09
Enterococcus Group	MPN or cfu	2	4.19E+14	5.92E+14	5	0.871	1.23	5	1.33	1.88
Estrilol	mg	2	2.62E+03	3.70E+03	3	0.906	1.28	1	0.906	1.28
Estrone	mg	2	2.62E+03	3.70E+03	3	0.007	0.00989	1	0.906	1.28
Fecal Coliform	MPN or cfu	2	6.29E+14	8.89E+14	5	0.906	1.28	5	1.48	2.09
Nitrite + Nitrate (as N)	g	2	5.24E+06	7.41E+06	5	0.906	1.28	5	0.906	1.28
Salmonella species	MPN or cfu	2	5.24E+10	7.41E+10	5	0.906	1.28	5	0.906	1.28
Soluble Reactive P (4500PF)	g	2	6.87E+08	9.70E+08	4	3.89	5.5	4	4.53	6.4
Staphylococcus aureus	MPN or cfu	2	7.86E+10	1.11E+11	4	0.772	1.09	6	0.132	0.186
TOC	g	2	5.35E+07	7.55E+07	5	0.182	0.257	5	0.67	0.946
Total Coliform	MPN or cfu	2	6.29E+14	8.89E+14	5	0.906	1.28	5	1.4	1.97
Total Dissolved P (4500PF)	g	2	8.65E+08	1.22E+09	4	3.94	5.57	4	5.28	7.46
Total Dissolved P (6020)	g	2	7.03E+08	9.92E+08	5	4.43	6.26	5	6.13	8.66
Total Dissolved Solids	g	2	2.93E+10	4.13E+10	5	5.51	7.78	5	12.4	17.5
Total Kjeldahl Nitrogen	g	2	3.16E+09	4.47E+09	5	12.1	17.1	5	12	17
Total Sulfate (SO ₄)	g	2	2.01E+09	2.84E+09	5	34.8	49.1	5	34.8	49.1